



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/578,057 | 03/19/2007 | Csaba Szeles | 4375-061141 | 4920 |
| 28389 7590 06/12/2008 THE WEBB LAW FIRM, P.C. 700 KOPPERS BUILDING 436 SEVENTH AVENUE PITTSBURGH, PA 15219 | | | | |
| EXAMINER | | | | |
| IGYARTO, CAROLYN | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2884 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 06/12/2008 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,057

Applicant(s)

SZELES ET AL.

Examiner

CAROLYN IGYARTO

Art Unit

2884

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/ISD)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 3 Aug 2007

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement submitted on 3 August 2007 has been considered by the Examiner and made of record in the application file.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazandjian et al. (US 2003/0209184), hereinafter referred to as Kazandjian, in view of Kulwicki (US 5,314,651) and Uekita et al. (4,907,043), hereinafter referred to as Uekita.

4. With respect to **claim 1**, Kazandjian teaches a radiation detector made from a compound comprising: $\text{Cd}_x\text{Zn}_{1-x}\text{Te}$, where $0 \leq x \leq 1$ (Abstract; [0015]); an element from column III of the periodic table ([0015]) in a concentration about 10 to 10,000 atomic parts per billion ([0065]); and an additional element in a concentration about 10 to 10,000 atomic parts per billion ([0015] and [0065]).

Kazandjian does not explicitly teach the additional element is a rare earth element selected from the group consisting of La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Kulwicki teaches doping a polycrystalline material with an element from column II of the periodic table and a rare earth element such as La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, and Er (Abstract; col. 2, lines 2-9). Uekita teaches that examples of polycrystalline material are CdTe and ZnTe and that these materials are usually doped with rare earth elements (col. 2, lines 54-57; col. 3, lines 6-12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the additional element, taught by Kazandjian, be a rare earth element such as La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, and Er, as a person of ordinary skill has good reason to pursue the known options within his/her technical grasp.

5. With respect to **claims 2-4 and 6**, Kazandjian teaches a method of forming a radiation detector compound comprising:

- (a) providing a mixture of Cd, Zn and Te ([0042]);
- (b) heating the mixture to a liquid state ([0022] lines 5-6; [0023] lines 2-4; [0042]; [0045]);
- (c) adding to the liquid mixture a first dopant ([0043]);
- (d) adding to the liquid mixture a second dopant ([0043]); and
- (e) solidifying said mixture including said first and second dopants to form the compound (claim 8).

Kazandjian does not explicitly teach that the first dopant adds shallow level donors (electrons) to the top of an energy band gap of said mixture when it is solidified or that the second dopant adds deep level donors and/or acceptors to the middle of said band gap of said mixture when it is solidified.

Kulwicki teaches doping polycrystalline with an element from column III of the periodic table, such as Al, Ga, or In, and a rare earth element, such as La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, or Er (Abstract). Doping with Al, Ga, or In will add shallow level donors (electrons) to the top of an energy band gap of said mixture when it is solidified. Doping with La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, or Er will add deep level donors and/or acceptors to the middle of said band gap of said mixture when it is solidified.

Uekita teaches that examples of polycrystalline material are CdTe and ZnTe and that these materials are usually doped with rare earth elements (col. 2, lines 54-57; col. 3, lines 6-12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first dopant, taught by Kazandjian, be Al, Ga,

Art Unit: 2884

or In, taught by Kulwicki, which will add shallow level donors (electrons) to the top of an energy band gap of said mixture when it is solidified and have the second dopant, taught by Kazandjian, be La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, or Er, as taught by Kulwicki, which will add deep level donors and/or acceptors to the middle of said band gap of said mixture when it is solidified as a person of ordinary skill has good reason to pursue the known options within his/her technical grasp.

6. With respect to **claims 5 and 7**, Kazandjian further teaches a concentration of the first dopant and of the second dopant in the compound is about 10 to 10,000 atomic parts per billion ([0015] and [0065]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAROLYN IGYARTO whose telephone number is (571)270-1286. The examiner can normally be reached on Monday - Thursday, 7:30 A.M. to 5 P.M. E.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2884

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Constantine Hannaher/
Primary Examiner, Art Unit 2884**

CI